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Effects of Internet Use on Farmers' Entrepreneurship Choices

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Effects of Internet Use on Farmers' Entrepreneurship Choices

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Abstract: In the context that the rural environment restricts the development of business opportunities and entrepreneurial resources, and the probability of rural households to start their own businesses continues to be lower than that of urban residents, the Internet provides a new path for rural households to start their own businesses. Based on the data of the Chinese Family Tracking Survey in 2018, this paper divides the Internet usage from two aspects: opportunity identification and resource mobilization, among them, Internet information acquisition and Internet learning behaviors belong to opportunity identification, while Internet social behaviors and Internet business behaviors belong to resource mobilization, and selects Logit model to analyze the impact of four types of Internet usage on farmers' entrepreneurial choices. The study found that both opportunity recognition behavior and resource mobilization behavior are important ways to promote farmers' entrepreneurial choices. In particular, opportunity recognition behavior effectively promotes the upgrading of farmers' entrepreneurial operational forms. Furthermore, Internet information acquisition and Internet learning behaviors are moderated by education in the process of influencing farmers' entrepreneurial choices, while Internet social behaviors and Internet business behaviors are moderated by financial products in the process of influencing farmers' entrepreneurial choices.

Key words: Internet; Entrepreneurial Decision-making; Farmers

Farmers' entrepreneurship can drive employment opportunities and increase farmers' incomes, which is of great significance to determine the victory of poverty alleviation and the implementation of rural revitalization strategies. Yet the probability of farmers' entrepreneurship continues to be low, due to the insufficient income, restricted business opportunities and entrepreneurial resources. In recent years, China has accelerated the construction of rural broadband infrastructure, vigorously expanded the rural Internet, and created new advantages in the digital economy. The "*Digital Agriculture and Rural Development Plan (2019-2025)*" addressed that by 2025, the rural Internet penetration rate is expected to increase to 70%. As a new type of infrastructure, the Internet has fully assisted the transformation and upgrading of rural industries. The Internet not only changed the lifestyle of farmers, but also provides a new path for famers to elevate the productions, promote business and finding new path to start entrepreneurship. The Internet breaks through market restrictions through a wide range of sales networks, and promotes the organic integration of rural e-commerce and the real economy; the emergence of social media and online education platforms has enriched the entrepreneurial resources and capabilities of farmers. The commercial development of Internet has prompted the transformation of traditional business models. The effect on farmers' entrepreneurial choices are significant positive(Zhao, 2020). However, there is no in-depth analysis on

the impact of Internet usage on farmers' entrepreneurial choices. This paper subdivides the Internet usage from two levels of opportunity identification and resource mobilization. This paper deeply discusses four types of Internet usage that influence on farmers' entrepreneurial choices: Internet information acquisition, Internet social behavior, Internet learning behavior, and Internet business behavior. In turn, it provides realistic support for the development of digital agriculture and rural areas, and provides a reference for the formulation of relevant policies.

Literature review

At the end of the 20th century, the bursting of the "Internet bubble" eventually led to the merger and reorganization of a large number of Internet companies, and even closed down and went bankrupt. Since then, "survivors" and newly established Internet companies have mushroomed. The emergence of Internet platforms such as social media has promoted the transformation of traditional business management models. New business models and new business formats have sprung up, and new entrepreneurial models and characteristics have emerged from time to time (Jarwar et al., 2017). Regarding the influencing factors of entrepreneurial behavior in the Internet era, the research is mainly carried out from two aspects: material level and psychological level. To mature the venture capital from material level, it specifically refers to important content such as social capital and human capital. Some studies suggest that social capital can facilitate entrepreneurial choice by accumulating resources and providing support (Davidsson and Honig, 2003; Liao and Welsch, 2005; Gedajlovic et al., 2013; Susanne et al., 2018; Nick et al., 2020). Further, "intensive" and "sparse" social capital are not completely opposite, but complement each other and play different roles in different situations (Batjargal, 2003; Batjargal, 2007). Human capital has a significant positive effect on entrepreneurial decision-making. The more educated an individual is, the more likely he is to engage in opportunistic entrepreneurship (Figueroa-Armijos et al., 2012). Personal traits also reflect the psychological factors of entrepreneurs. Some studies have confirmed that personal traits are highly correlated with entrepreneurial success. The uncertainty of the entrepreneurial environment in the Internet era would led to the inability of entrepreneurs on making rational decisions, and the resulting cognitive biases are divided into "optimistic" and "arrogant". "Optimistic" entrepreneurs tend to invest in venture capital and extend the cycle of entrepreneurial projects, while "arrogant" entrepreneurs tend to be overconfident and make judgments that don't match the facts. Regarding the impact of Internet use on farmers' entrepreneurial choices, existing studies basically believe that the Internet, as a new type of infrastructure, has greatly changed farmers' production and lifestyle, and promoted farmers' entrepreneurial choice (Zhao, 2020). Further, existing research has been expanded and enriched mainly from the following two aspects. One of the aspects discuss the influence mechanism of Internet use on farmers' entrepreneurial choices: On the one hand, Internet use can break through the limitations of time and space, promoting farmers to make entrepreneurial choices by reducing information search costs and improving transaction matching. Therefore, Internet use has an information channel effect (Zhao,

2020).

After systematically sorting out mainly thesise, it can be found that the influencing factors of entrepreneurial behavior in the Internet era are mainly carried out from two aspects: material level and psychological level, and the entrepreneurial characteristics of rural and urban areas are very different. Previously research basically believe that the Internet, as a new type of infrastructure, promotes farmers' entrepreneurial choices, and enriches them to a certain extent in terms of influencing mechanisms and selection types. However, there has not been a comprehensive classification discussion on Internet usage and farmers' entrepreneurship and management forms. In real life, although some householders have discovered entrepreneurial opportunities, Due to insufficient resource mobilization ability, it is ultimately impossible to make choices. For farmers, social networks and entrepreneurial funds are important resources that can be mobilized. Therefore, in the process of farmers making entrepreneurial choices, social networks and financial access have played an important facilitating role (Peng, 2004). As a new type of infrastructure, the Internet has greatly changed farmers' way of life and production. On the basis of traditional entrepreneurial theory, the Internet enriches the ability of opportunity identification and resource mobilization. The convenience of Internet information acquisition, the popularity of Internet learning behaviors, the extensiveness of Internet social behaviors, and the availability of Internet business behaviors have further improved farmers' ability to identify opportunities and mobilize resources. The empirical research framework constructed in this paper deeply analyzes the role of Internet usage patterns on farmers' entrepreneurial choices, and subdivides Internet usage patterns according to the two levels of opportunity identification ability and resource mobilization ability proposed by entrepreneurship theory. The analysis believes that Internet information acquisition and Internet learning behavior improve the ability to identify opportunities, while Internet social behavior and Internet business behavior improve the ability to mobilize resources.

The Internet has the function of obtaining information. Online media releases information through various applications, search engines, short videos and other platforms. Netizens can more easily obtain news information and repost it multiple times to improve the dissemination effect of news. Internet information acquisition is mainly to promote farmers' entrepreneurial choices from the following two aspects: On the one hand, the Internet can spread business opportunities and reduce the search cost of entrepreneurial information, so farmers can quickly identify entrepreneurial opportunities in a constant changing market. Sufficient and timely Internet information, rational allocation of production factors and production structure can help famers seize opportunities. Based on this, the acquisition of entrepreneurial information plays a key role in farmers' entrepreneurial choices. On the other hand, the Internet can diffuse commodity transaction information, break through market restrictions through a broad sales network, and promote the organic integration of rural e-commerce and the real economy. Farmers can directly connect with market demand when making entrepreneurial choices, thereby reducing information asymmetry and improving transaction matching. In conclusion, using the Internet to

obtain information may facilitate farmers' entrepreneurial choices.

Based on the conclusion above, this paper proposes Hypothesis 1: Compared with farmers who do not use the Internet to obtain information, farmers who use the Internet to obtain information are more likely to make entrepreneurial choices.

The Internet has a learning function. Using the Internet for learning can promote the improvement of farmers' human capital. Using the Internet for learning mainly enriches the human capital of farmers from the following two aspects: First, the extensive use of online education and training software has effectively improved the comprehensive quality of farmers. Second, the Internet platform provides farmers with more migrant working opportunities, the rich experience of migrant workers has effectively improved the entrepreneurial knowledge of farmers. The Internet can break through the limitation of time and space, and provide a wider channel for farmers to receive skills training, health education and migrant working. The comprehensive study of entrepreneurial knowledge, the accelerated absorption of entrepreneurial information, and the accumulation of entrepreneurial experience have improved the necessary qualities of farmers for entrepreneurial choices to a certain extent. The necessary qualities for starting a business can effectively enhance the confidence of farmers in making entrepreneurial choices, and have a significant role in promoting farmers’ entrepreneurial choices. Above all, using the Internet for learning may facilitate farmers' entrepreneurial choices.

Based on the conclusion above, this paper proposes Hypothesis 2: compared with farmers who did not use the Internet for learning, farmers who use the Internet for learning are more likely to make entrepreneurial choices.

The Internet has social function. While mainstream social platforms such as Weibo, WeChat, and QQ are improving and enriching their applications, some social software has made innovations in segmented areas. Among them, social applications related to entrepreneurship are putting forth new ideas and creating a new service ecosystem. The extensive use of online social software has effectively maintained and expanded the social scope of farmers: One is to maintain the existing relationship network and establish deeper connections in Internet social networking; the other is to expand the scope of communication in Internet social networking, and then establish a new relationship network. Chinese rural society is a network of human relationships centered on blood, kinship and geography, and criss-crossed by relatives and friends. For farmers, the relationship network they are situating can provide rich channels and resources for their entrepreneurial choices Internet social behavior plays a key role in farmers' choice of entrepreneurship, it enriches the individual's relationship network. The deep relationship network can better promote farmers to obtain entrepreneurial resources. The higher the quality of communication, the richer the entrepreneurial resources. In conclusion, using the Internet for socializing may facilitate farmers' entrepreneurial choices.

Based on the conclusion above, this paper proposes Hypothesis 3: Compared with farmers who do not use the Internet to socialize, farmers who use the Internet to socialize are more likely to make entrepreneurial choices.

The development of Internet commerce reduces information asymmetry and

improves the efficiency of resource allocation, promote the transformation of traditional business models to Internet business models represented by microfinance, crowdfunding, P2P, and blockchain. Internet business activities refer to individuals participating in transaction activities through the use of online banking, online payment and other functions. Using the Internet to participate in commercial activities has effectively improved farmers' ability to obtain funds from the following two aspects: One is to break through barriers and broaden the channels of funding sources. Internet business behavior can ease the credit constraints of farmers; the second is to save time and cost, improve the efficiency of capital use, and online payment can reduce information asymmetry, Improve the efficiency of financial services by providing a more convenient and secure transaction system. During the early stage of statring a buisness, lack of funds is an important reason why farmers cannot make entrepreneurial choices. Start-up capital plays a key role in the development and operation of entrepreneurial projects. In conclusion, using the Internet to participate in commercial activities may facilitate farmers' entrepreneurial choices.

Based on the conclusion above, this paper proposes Hypothesis 4: Compared with farmers who do not use the Internet to participate in business activities, farmers who use the Internet to participate in business activities are more likely to make entrepreneurial choices.

Data sources and variable selection

Data Sources

All the Data came from China Family Panel Studies (CFPS). CFPS is a It is a large-scale micro-household survey conducted by the China Social Science Survey Center of Peking University. The China Family Tracking Survey is carried out every two years. Through tracking and tracking individuals, families and communities, dynamic data reflecting changes in China's social, economic, demographic, education and health characteristics are obtained, providing a data basis for academic research and policy analysis. The research object of this paper is the rural households nationwide, considering that the head of the household is the family member who is most familiar with the household income and expenditure in the past 12 months. Therefore, it is necessary to match the farmer household data and the adult (householders) data in the China Household Tracking Survey, and eliminate the missing data and abnormal data at the same time.

Variable selection

The explanatory variable in this paper is the entrepreneurial choice of farmers. The corresponding question for farmers' entrepreneurial choices is: "In the past 12 months, have any family members in your family engaged in self-employment or started a private business?"

The core explanatory variables of this paper are Internet information acquisition, Internet learning behavior, Internet social behavior and Internet business behavior. The householder is the respondent who is most familiar with household financial expenditure, so this paper uses the Internet usage of the head of household as a proxy variable for the core explanatory variable. The control variables in this paper are mainly divided into the following three aspects: one is the personal characteristic

variable; the second is the family characteristic variable; the third is the regional characteristic variable. This paper select the gender, age, education level, health status, and marital status of the head of household as proxy variables for personal characteristics; using gifts expenditure, formal financing, informal financing, collective land, housing, and per capita net income as proxy variables for household characteristics. The economic development level of each region is different, so set the eastern region as 1, set the central region as 2, and set the western region as 3.

Descriptive statistics

Table 1 provides descriptive statistics for the explained variables, core explanatory variables, personal characteristics control variables and family characteristics control variables in this paper. After matching the data of farmers and adults (heads of households) in the 2018 China Household Tracking Survey, the missing data (unknown, refused to answer, blank) were further eliminated, and 6144 valid samples were obtained.

In terms of entrepreneurship choice of the explained variables, there are 462 peasant households making entrepreneurship choices in total, accounting for only about 7.42% of the total number of samples. It can be found that the number of peasant households making entrepreneurship choices is relatively small. To control variables for personal characteristics, the average age of household heads is about 52 years old, and the average years of education is about 6 years. In terms of family characteristics control variables: the average amount of formal loans is 1.038, and the average amount of informal loans is 1.598, It can be found that the proportion and loan amount of farmers engaged in formal financing are lower than those of informal financing, so private lending and loans from relatives and friends are still important ways of financing for farmers. In terms of controlling the regional descriptive variables, there are 2314 farmers in the eastern region, 1749 in the central region, and 2081 in the western region. It can be found that the samples are distributed evenly in each region.

Table 1

Variables	mean	s.d.	min	max
entrepreneurship choices	0.074	0.262	0	1
Internet information acquisition	0.338	0.473	0	1
Internet learning behavior	0.140	0.347	0	1
Internet social behavior	0.333	0.471	0	1
Internet business behavior	0.204	0.403	0	1
gender	0.558	0.497	0	1
age	51.861	14.212	16	92
education	6.037	4.445	0	19
health	0.784	0.412	0	1
marriage	0.843	0.363	0	1
expenditure on favors and gifts	6.997	2.547	0	11.156
formal financing	1.038	3.167	0	14.509
informal financing	1.603	3.736	0	13.459
Collective land	0.881	0.324	0	1

housing	0.145	0.352	0	1
income	9.225	1.104	0	13.187

Empirical testing and result analysis

Table 2 reports the regression results of how Internet usage affects farmers' entrepreneurial choices. Model (1) reports the regression results that Internet information acquisition and Internet learning behavior affect farmers' entrepreneurial choices. The coefficient of Internet information acquisition is 0.576, the sign is positive, and it is significant at the 1% level, so hypothesis 1 holds. The coefficient of Internet learning behavior is 0.289 with positive sign and significant at the 5% level, so Hypothesis 2 holds. Model (2) reports the regression results of Internet social behavior and Internet business behavior affecting farmers' entrepreneurial choice. The coefficient of Internet social behavior is 0.440, the sign is positive, and it is significant at the 1% level, so Hypothesis 3 is established. Model (2) reports the regression results of Internet social behavior and Internet business behavior affecting farmers' entrepreneurial choice. The coefficient of Internet social behavior is 0.440, the sign is positive, and it is significant at the 1% level, so Hypothesis 3 is hold. The coefficient for Internet commerce is 0.654 with positive sign and significant at the 1% level, so Hypothesis 4 holds.

In terms of personal characteristics control variables, the gender of the head of household does not have a significant effect on the choice of farmers to start a business. The reason may be that in recent years, women have gradually occupied a place in the entrepreneurial process with independent characteristics and gender advantages, which has caused a certain impact on the traditional male entrepreneurial dominance. The sign of the household head age coefficient is negative, and the sign of the household head education coefficient is positive, and it is significant at the 10% level. The longer the household head has been educated, the more comprehensive and enriched his knowledge and skills, and the more accurate understanding and judgment of the entrepreneurial support policy, so that he can seize entrepreneurial opportunities in the ever-changing market. The sign of the householders’ marriage coefficient is positive and significant at the 1% level. The householders’ marriage has a certain positive effect on the choice of farmers to start a business. When a family is enduring a great hardships in pioneer work, the mutual support of married couples can effectively reduce the pressure of parenting, share market risks together, and then increase their confidence in starting a business.

In terms of family characteristics control variables, the coefficient of human favor and courtesy expenditure is positive in sign and significant at the 5% level.4. Expenditure on favors and gifts has a certain positive effect on farmers' choice of entrepreneurship. Expenditure on favors and gifts can provide opportunity information and broaden the resource base for farmers to make entrepreneurial choices. The sign of the coefficient of informal financing is positive, and it is significant at the level of 5%. Informal financing has a certain positive effect on farmers' entrepreneurial choices. Formal financing and informal financing can break through financing barriers and provide financial support for farmers to make

entrepreneurial choices. Collective land has no significant effect on farmers' choice of entrepreneurship, and the sign of the housing coefficient is positive and significant at the 1% level. Housing has a certain positive effect on farmers' entrepreneurial choices. Multiple houses may provide farmers with venues and necessary supporting facilities for entrepreneurial choices. The sign of total household income is positive and significant at the 1% level. For farmers, entrepreneurship faces market risks and needs financial support. The level of income is directly related to whether farmers have a certain amount of start-up capital to start a business.

Table 2

variable	（1）		（2）	
	opportunity identification		resource mobilization	
Internet information acquisition	0.576***			
	(0.128)			
Internet learning behavior		0.289**		
		(0.133)		
Internet social behavior			0.440***	
			(0.126)	
Internet business behavior				0.654***
				(0.136)
gender	0.068	0.057	0.066	0.066
	(0.107)	(0.107)	(0.107)	(0.107)
age	-0.009*	-0.016***	-0.011**	-0.007
	(0.005)	(0.004)	(0.005)	(0.005)
education	0.028*	0.035**	0.033**	0.028*
	(0.014)	(0.014)	(0.014)	(0.014)
health	0.253*	0.266*	0.255*	0.269*
	(0.152)	(0.152)	(0.152)	(0.152)
marriage	0.628***	0.671***	0.635***	0.647***
	(0.178)	(0.179)	(0.178)	(0.178)
expenditure on favors and gifts	0.061**	0.066**	0.062**	0.065**
	(0.027)	(0.027)	(0.027)	(0.027)
Formal financing	0.044***	0.046***	0.045***	0.042***
	(0.013)	(0.013)	(0.013)	(0.013)
informal financing	0.031**	0.032**	0.031**	0.033**
	(0.013)	(0.013)	(0.013)	(0.013)
Collective land	-0.024	-0.018	-0.014	0.025
	(0.148)	(0.148)	(0.148)	(0.149)
housing	0.571***	0.601***	0.580***	0.574***
	(0.119)	(0.118)	(0.119)	(0.119)
income	0.417***	0.427***	0.419***	0.413***
	(0.062)	(0.062)	(0.062)	(0.062)
Regional effect	yes	yes	yes	yes
Pseudo R^2	0.098	0.093	0.095	0.099
obeservations	6144	6144	6144	6144

robustness check

The explained variable in the benchmark regression of this paper is the farmers' entrepreneurial choices. Specifically, it refers to whether or not a family member started a business in 2018. Specifically, it refers to whether or not a family member started a business in 2018. However, in the 6144 samples of the benchmark regression, some households may have members engaged in self-employment or starting private enterprises, which may not directly reflect the promoting effect of Internet usage on farmers' entrepreneurial choices. Based on the facts above, this paper selects the 2016 and 2018 China Household Tracking Survey data to analyze the impact of Internet use on farmers' start-up choice and defines farmers' start-up choice variables: If a family has no members engaged in self-employment or private enterprises in 2016 but has family members engaged in self-employment or private enterprises in 2018, the farmer start-up option is 1; otherwise the value is 0. After matching the data of the 2016 China Family Panel Studies, the households with members engaged in self-employment or private enterprises in 2016 and 2018 were eliminated, and 5,300 valid samples were obtained.

Table 4 reports the regression results of the impact of Internet usage on farmers' start-up choices. Model (1) reports the regression results of the influence of Internet information acquisition and Internet learning behavior on farmers' start-up choices, The coefficient of Internet information acquisition is 0.549, the sign is positive and significant at the 1% level, and the coefficient of Internet learning is 0.324, the sign is positive and significant at the 10% level. Model (2) reports the regression results of the influence of Internet social behavior and Internet business behavior on farmers' start-up choices, The coefficient of Internet social behavior is 0.469, the sign is positive and significant at the 1% level, and the coefficient of Internet business behavior is 0.451, the sign is positive and significant at the 5% level. From the perspective of the influence coefficient and significance of Internet usage patterns, it can be found that the regression results of the impact of Internet usage patterns on farmers' start-up choices are basically consistent with the benchmark regression results.

Table 3

variables	（1）		（2）	
	opportunity identification		resource mobilization	
Internet information acquisition	0.549***			
	(0.184)			
Internet learning behavior		0.324*		
		(0.189)		
Internet social behavior			0.469***	
			(0.181)	
Internet business behavior				0.451**
				(0.196)
Control variable	yes	yes	yes	yes
Pseudo R^2	0.076	0.073	0.075	0.074
observations	5300	5300	5300	5300

The influence of Internet usage on farmers' entrepreneurship

From the perspective of the industry to which farmers start their own businesses, farmers may be engaged in service industry, transportation, construction, mining, processing and production, and commerce. They have rich formats, different scales, and certain differences in capital and labor input. Therefore, it is necessary to divide the types of farmers' entrepreneurship choices. According to different business forms, farmers' entrepreneurship can be divided into two types: "self-employment base" and "employment base": "Self-employment base" is defined as entrepreneurship is the ownership of the means of production by individuals, based on personal labor, a form of operation in which labor income is owned by the individual laborer. "Employment base" entrepreneurship refers to a for-profit economic organization that is invested by a natural person or controlled by a natural person and is based on hired labor. Based on the , this paper selects the Mlogit model to analyze the impact of Internet usage on the form of farmers' entrepreneurship and management: if there is no member of the family to choose to start a business, the value of the farmer's entrepreneurial management form is 0; if there are family members engaged in "self-employment base" entrepreneurship, the value of the farmer's entrepreneurial operation form is 1; If there are family members engaged in "employment base" entrepreneurship, the value of the farmer's entrepreneurial management form is 2. After processing the data of the 2018 China Household Tracking Survey, a total of 6,133 valid samples were obtained.

Table 4 reports the regression results of the influence of Internet usage patterns on farmers' entrepreneurial management forms. Model (1) uses P0 as the benchmark group to report the regression results of how Internet usage affects farmers' "self-employed base" entrepreneurial choices. The coefficients of Internet information acquisition and Internet learning behavior are positive, but not significant. Therefore, Internet information acquisition and Internet learning behavior do not have a significant effect on farmers' "self-employed base" entrepreneurship. The coefficient of Internet social behavior is 0.398, the sign is positive and significant at the 10% level, and the coefficient of Internet business behavior is 0.652, the sign is positive and significant at the 1% level. Therefore, Internet social behavior and Internet business behavior have a significant positive effect on farmers' "self-employed" entrepreneurship. Model (2) uses P0 as the benchmark group to report the regression results that Internet use affects farmers' "employment-type base" entrepreneurial choices. The coefficient of Internet information acquisition is 0.697, the sign is positive and significant at the 1% level, and the coefficient of Internet learning behavior is 0.361, the sign is positive and significant at the 5% level. The coefficient of Internet social behavior is 0.470, the sign is positive and significant at the 1% level, and the coefficient of Internet business behavior is 0.679, the sign is positive and significant at the 1% level, It can be found that Internet information acquisition, Internet learning behavior, Internet social behavior, and Internet business behavior are all important ways to promote farmers' "employment-based" entrepreneurship. Further, opportunity identification behaviors, Internet information acquisition and

Internet learning behaviors, do not have a significant effect on farmers' "self-employment base" entrepreneurship, but have a significant positive effect on farmers' "employment base" entrepreneurship. The reason may be that opportunity identification behavior, that is, Internet information acquisition and Internet learning behavior, can enhance and enrich farmers' entrepreneurial ability and entrepreneurial knowledge. Therefore, the behavior of opportunity identification is more likely to promote farmers to carry out "employment base" entrepreneurship.

Table 4

variables	（1）				（2）			
	P1/P0				P2/P0			
information acquisition	0.142				0.697***			
	(0.207)				(0.157)			
Learning behavior		0.119				0.361**		
		(0.221)				(0.150)		
social behavior			0.398*				0.470***	
			(0.210)				(0.148)	
business behavior				0.652***				0.679***
				(0.224)				(0.158)
Control variable	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.087	0.083	0.085	0.088	0.087	0.083	0.085	0.088
observations	6133	6133	6133	6133	6133	6133	6133	6133

Moderating effect

Ulteriorly, in rural areas, compared to the “elite class”, the “grassroots class” is limited by entrepreneurial information and entrepreneurial knowledge, It is difficult to identify entrepreneurial opportunities, so "grassroots entrepreneurship" often struggled at the beginning. It is generally believed that the level of personal education is closely related to the ability to identify opportunities. As a result, this paper intends to focus on exploring whether education level can play a moderating effect in the process of Internet usage affecting farmers' entrepreneurial choices. Specifically, can highly educated "elites class" make better use of the Internet to make entrepreneurial choices? Are disadvantaged groups with low education more inclined to make entrepreneurial choices after using the Internet? Does the Internet bring farmers a digital divide or a digital dividend?

Table 5 reports the effect of education moderating Internet usage on farmers' entrepreneurial choices. Model (1) reports the estimated results after adding the Internet information acquisition×education interaction term. Among the results, The effect of education regulation on Internet information acquisition on entrepreneurship shows that the coefficient of Internet information acquisition×education interaction term is -0.048, and the sign is negative, and significant at the 10% level. The effect of education regulating Internet information acquisition on "employment base" entrepreneurship shows that the coefficient of Internet information acquisition× education interaction term is -0.079, the sign is negative, and it is significant at the 5%

level. Therefore, the impact of Internet information acquisition on farmers' entrepreneurial choices is moderated by education. Compared with the "elite class" with high education, disadvantaged groups with low education are more inclined to obtain information through the Internet to make entrepreneurial choices. Model (2) reports the estimated results after adding the Internet learning behavior×education interaction term. Among them, the results of education regulating the influence of Internet learning behavior on entrepreneurship show that the coefficient of Internet learning behavior×education interaction term is -0.129, the sign is negative, and it is significant at the 1% level. The effect of education regulating Internet information acquisition on "employment-type" entrepreneurship shows that the coefficient of Internet information acquisition×education interaction term is -0.147, the sign is negative, and it is significant at the 1% level. Therefore, the influence of Internet learning behavior on farmers' entrepreneurial choices is moderated by education. Compared with the "elite class" with high education, the disadvantaged groups with low education are more inclined to make entrepreneurial choices through Internet learning behavior. Judging from the coefficient symbols of Internet information acquisition×educational interaction term and Internet learning behavior×educational interaction term, compared with the "elite class" with high education, the disadvantaged groups with low education will be more inclined to use the Internet to obtain information and learning resources. to make entrepreneurial choices. The accelerated absorption of entrepreneurial information and the comprehensive learning of entrepreneurial knowledge have improved the quality and ability of disadvantaged groups to make entrepreneurial choices. Therefore, Internet information acquisition and Internet learning behavior can enable rural disadvantaged groups to quickly identify entrepreneurial opportunities in the rapidly changing market. The Internet has brought huge digital dividends to farmers, effectively alleviating the "digital divide" phenomenon. At the level of opportunity identification, it has greatly promoted the choice of farmers to start a business, and even to a certain extent, it can even alleviate the disadvantage of the "grassroots" who lack formal education in the process of starting a business.

Table 5

variables	（1）			（2）		
	entrepreneurial	self-employment	employment-type	entrepreneurial	self-employment	employment-type
information acquisition	0.927***	0.396	1.185***			
	(0.231)	(0.364)	(0.288)			
learning behavior				1.520***	0.947*	1.659***
				(0.317)	(0.504)	(0.379)
education	0.052***	-0.026	0.100***	0.063***	-0.009	0.101***
	(0.231)	(0.032)	(0.025)	(0.016)	(0.026)	(0.020)
information acquisition×	-0.048*	0.006	-0.079**			
education	(0.027)	(0.043)	(0.033)			
learning behavior×				-0.129***	-0.059	-0.147***
education				(0.031)	(0.051)	(0.037)

Control variable	yes	yes	yes	yes	yes	yes
Constant	-8.063***	-5.777***	-10.078***	-7.739***	-5.617***	-9.667***
	(0.718)	(1.125)	(0.874)	(0.709)	(1.108)	(0.859)
Regional effects	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.097	0.055	0.109	0.098	0.056	0.107
observations	6144	6144	6144	6144	6144	6144

Due to geographical and institutional isolation, farmers are often cling conservality to the old system, and their resources are more scarce, so it is difficult for them to make entrepreneurial choices. Compared with the resource-rich "elite class", resource-poor disadvantaged groups are limited by their entrepreneurial ability and cannot effectively mobilize entrepreneurial resources. Therefore, "grassroots entrepreneurship" often leads to a shabby start. If individuals have financial products such as stocks, funds, treasury bonds, trust products, foreign exchange products, etc., their ideas and concepts may be more innovative, more likely to broaden their social scope and establish a deeper network of relationships, and at the same time tend to break through traditional business models to obtain more funds. Therefore, financial products are closely related to resource mobilization ability. This article intends to focus on whether financial products can play a moderating effect in the process of Internet usage affecting farmers' entrepreneurial choices. Specifically, can the resource-rich "elite class" make better use of the Internet for entrepreneurial choices? Are disadvantaged groups with limited resources more inclined to make entrepreneurial choices after using the Internet? Does the Internet bring farmers a digital divide or a digital dividend?

Table 6 reports the effect of financial products regulating Internet usage on farmers' entrepreneurial choices. Model (1) reports the estimated results after adding the Internet social behavior × financial product interaction term. The effect of financial products regulating Internet social behavior on "employment base" entrepreneurship shows that the coefficient of Internet social behavior × financial product interaction term is -1.658, the sign is negative, and it is significant at the 10% level. The impact of Internet social behavior on farmers' entrepreneurial choices is moderated by financial products. Compared with farmers with financial products, farmers without financial products are more inclined to make entrepreneurial choices through Internet social behaviors.

It is found through analysis that the Internet, as a new type of infrastructure, has greatly changed the production and lifestyle of farmers, and provided a new path for rural disadvantaged groups to make entrepreneurial choices. Judging from the coefficient signs of the Internet social behavior × financial product interaction term and the Internet business behavior × financial product interaction term, compared with the "elite class" with high education, the disadvantaged groups with low education will use the Internet to participate in social and business activities and more inclined to make entrepreneurial choices. The Internet has had a huge impact on the risk attitude of rural residents, effectively alleviating the old-fashioned ideology of rural residents, and providing a new path for disadvantaged groups with limited resources

to make entrepreneurial choices. Internet social behavior and Internet business behavior can enable rural disadvantaged groups to broaden social resources and improve their ability to obtain funds. To sum up, the Internet has brought huge digital dividends to farmers, effectively alleviated the phenomenon of the "digital divide", greatly promoted farmers' entrepreneurial choices at the level of resource mobilization, and even alleviated the disadvantaged groups in starting a business to a certain extent. The disadvantage of lack of resources in the process.

Table 6

variales	（1）			（2）		
	entrepreneurial	self-employment	employment-type	entrepreneurial	self-employment	employment-type
social behavior	0.452***	0.483**	0.387***			
	(0.127)	(0.212)	(0.151)			
business behavior				0.679***	0.793***	0.574***
				(0.136)	(0.226)	(0.161)
financial product	0.716	-11.566	1.083	0.821	0.886	0.690
	(0.770)	(565.612)	(0.775)	(0.648)	(1.043)	(0.768)
social behavior×	-1.267	11.060	-1.658*			
financial product	(0.279)	(565.612)	(0.918)			
business behavior				-1.607**	-2.202	-1.285
×financial product				(0.790)	(1.459)	(0.912)
Control variable	yes	yes	yes	yes	yes	yes
Constant	-7.873***	-5.848***	-9.727***	-8.038***	-6.022***	-9.870***
	(0.713)	(1.123)	(0.863)	(0.718)	(1.126)	(0.870)
Regional effects	yes	yes	yes	yes	yes	yes
Pseudo R^2	0.096	0.057	0.104	0.100	0.062	0.106
observations	6144	6144	6144	6144	6144	6144

Conclusions and suggestions

In recent years, China has accelerated the application of modern information technology in the agricultural field, vigorously developed the rural Internet, and launched a national digital village pilot. As a new type of infrastructure, the Internet has greatly changed the production and lifestyle of farmers, providing a new path for farmers to choose to start a business. Given that the existing literature has failed to adequately study the impact of Internet usage patterns on farmers' entrepreneurial choices. Based on the data of the Chinese household tracking survey, this paper divides the Internet usage patterns from the two levels of opportunity identification and resource mobilization. Based on the data of the China Family Panel Studies, this paper divides the Internet usage patterns from the two levels of opportunity identification and resource mobilization. The Logit model was selected to analyze the influence of four types of use methods of Internet information acquisition, Internet social behavior, Internet learning behavior and Internet business behavior on farmers' entrepreneurial choices. The study found that farmers who use the Internet to obtain information, learn resources, and participate in social and business activities are more

likely to make entrepreneurial choices. In the robustness test of the regression results, excluding the samples of farmers who have been entrepreneurial for more than two years, it can be found that the empirical results are still significant. According to different business forms, this paper explores the differences in the effect of Internet usage on "self-employment base" and "employment base" entrepreneurship. Opportunity recognition behaviors, i.e. Internet information acquisition and Internet learning behaviors, have played an important role in promoting the upgrading of farmers' entrepreneurship and management forms. Furthermore, Internet information acquisition and Internet learning behavior are moderated by education in the process of influencing farmers' entrepreneurial choices.

important role of social media in obtaining entrepreneurial resources and expanding entrepreneurial channels, actively innovating Internet business models, and promoting new Internet business models such as microfinance, crowdfunding, P2P, and blockchain. The development of rural areas and comprehensively promote the choice of entrepreneurship for farmers

First, expand the ways of using the Internet and comprehensively promote farmers' choice of entrepreneurship. The research conclusion points out that Internet information acquisition, Internet learning behavior, Internet social behavior, and Internet business behavior are all important ways to promote farmers' entrepreneurial choices, and can effectively alleviate the phenomenon of "digital divide" in rural areas. Therefore, the government should publicize and guide farmers to expand the way of using the Internet, and make full use of the advantages of the Internet in the speed and breadth of information dissemination. The government should develop and apply Internet learning platforms for farmers, support the promotion and application of social media in rural areas, and pay attention to the important role that social networking plays in acquiring entrepreneurial resources and expanding entrepreneurial channels. Actively innovate Internet business models, promote the development of new Internet business models can comprehensively promote farmers' entrepreneurial choices. New Internet business models such as microfinance, crowdfunding, P2P, and blockchain in rural areas are also under considerations.

Second, promote entrepreneurship-related information learning and training platforms, guiding farmers to expand the scale of entrepreneurship and operation. The research conclusion points out that opportunity identification behaviors, namely Internet information acquisition and Internet learning behaviors, have played an important role in promoting the upgrading of farmers' entrepreneurial management forms. Internet information acquisition and Internet learning behavior can effectively improve the ability and literacy of farmers. The acquisition of information and the accumulation of knowledge open up the thinking of farmers and provide a necessary foundation for expanding the scale of entrepreneurship and operation. Therefore, the government should develop an Internet learning and training platform for entrepreneurship farmers, promote entrepreneurship-related information; increase the service content of basic education and skills training, organize professional and technical personnel to provide centralized guidance. Increase the service content of basic education and skills training, organize professional and technical personnel to

provide centralized guidance, and provide necessary qualities and capabilities for the expansion of the scale of self-employed and enterprise operations.

Third, promote the entrepreneurship of disadvantaged groups in rural areas. The research conclusion points out that Internet information acquisition, Internet learning behavior, Internet social behavior, and Internet business behavior can effectively alleviate the phenomenon of "digital divide" in rural areas. Relative to the "elite", disadvantaged groups in rural areas are more likely to make entrepreneurial choices after using the Internet. Therefore, the government should lower the entry threshold for entrepreneurship, give certain preferential policies for entrepreneurship to the rural disadvantaged groups, and conduct Internet skills training for the rural disadvantaged groups to better stimulate their entrepreneurial enthusiasm.

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